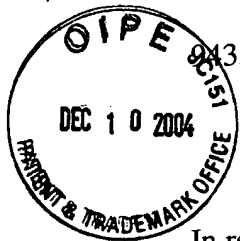


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94350.00005

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )  
Yulu Wang, et al. ) Examiner:  
Serial No.: 10/820,091 ) Group Art Unit: 1615  
Filed: April 7, 2004 ) Confirmation No. 7131

For: **POLYMER COATING/ENCAPSULATION OF NANOPARTICLES  
USING A SUPERCRITICAL ANTISOLVENT PROCESS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 C.F.R. § 1.56, the references listed on the attached form PTO-1449 are being brought to the attention of the Examiner for consideration in connection with the examination of the above-identified patent application.

The Information Disclosure Statement submitted herewith is being filed, to the best of applicant's knowledge, before the mailing date of a first Office Action on the merits.

The filing of this Information Disclosure Statement shall not be construed to be a representation that a search has been conducted, nor shall it be construed as an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

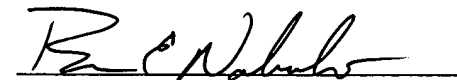
Serial No. 10/820,091

Attorney Docket: 94350.00005

It is respectfully requested that the Examiner return a copy of the attached form PTO-1449 with initials or other appropriate marks indicating consideration of the cited materials.

Respectfully submitted,

Date: December 8, 2004

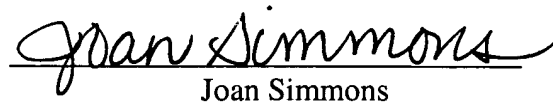


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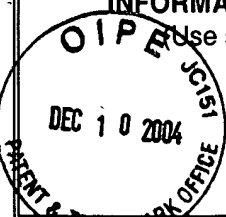
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I hereby certify that the enclosed Information Disclosure Statement along with a PTO-1449 Form and the cited references are being deposited with the United States Postal Service as first class mail, postage prepaid, addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 8, 2004.

Dated: December 8, 2004

  
Joan Simmons

HARTFORD: 628662.01

Form PTO-1449 Patent and Trademark Office (modified 2/91) <b>INFORMATION DISCLOSURE CITATION</b> (Use several sheets if necessary)	Attorney Docket Number: 94350.00005	Serial No.: 10/820,091
	Applicants: Yulu Wang, et al.	
	Filing date: 4/7/04	Group Art Unit: 1615

## U.S. PATENT DOCUMENTS

Examiner Initial	Patent number	Date	Inventor	Class	Sub class	Filing date if appropriate
	5,766,637	6/16/1998	Shine et al.			
	5,833,891	11/10/1998	Subramaniam et al.			

## FOREIGN PATENT DOCUMENTS

	Document number	Date	Country	Class	Sub class	Translation Yes No

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	D. Wang, D.R. Robinson, G.S. Kwon, J. Samuel, Encapsulation of Plasmid DNA in Biodegradable Poly(D,L-Lactic-co-Glycolic Acid) Microspheres as a Novel Approach for Immunogene Delivery, J. Control. Rel., 57 (1999) 9.
	K.S. Soppimath, A.R. Kulkarni, T.M. Aminabhavi, Encapsulation of Antihypertensive Drugs in Cellulose-Based Matrix Microspheres: Characterization and Release Kinetics of Microspheres and Tableted Microspheres, J. Microencapsulation 18 (3)(2001) 397-409.
	J.H. Kim, T.E. Paxton, D.L. Tomasko, Microencapsulation of Naproxen Using Rapid Expansion of Supercritical Solutions, Biotechnol. Prog. 12 (1996) 650-661.
	Y. Wang, D. Wei, R. Dave, R. Pfeffer, M. Sauceau, J.-J. Letourneau, J. Fages, Extraction and precipitation particle coating using supercritical CO <sub>2</sub> , Powder Technology 127 (2002) 32-44.
	M.L. O'Neill, Q. Cao, M. Fang, K.P. Johnston, S.P. Wilkinson, C. Smith, J.L. Kerchner, S.H. Jereller, Solubility of Homopolymers and Copolymers in Carbon Dioxide, Ind. Eng. Chem. Res. 37 (1998) 3067-3079.
	V. Pessey, D. Mateos, F. Weill, F. Cansell, J. Etourneau, B. Chevalier, SmCo <sub>5</sub> /Cu Particles Elaboration Using A supercritical Fluid Process, J. of Alloys and Compounds 323 (2001) 412-416.
	V. Pessey, R. Garriga, F. Weill B. Chevalier, J. Etourneau, F. Cansell, Core-shell Materials Elaboration in Supercritical Mixture CO <sub>2</sub> /Ethano, Industrial & Engineering Chemistry Research 39 (12)(2000) 4714-4719.
	Y. Wang, R. Dave, R. Pfeffer, Nanoparticle Encapsulation with Heterogeneous Nucleation in A Supercritical Antisolvent Process, Journal of Supercritical Fluids, In Press (2003).
	A. Kordikowski, A.P. Schenk, R.M. Van Nielen, C.J. Peters, Volume Expansions and Vapor-Liquid Equilibria of Binary Mixtures of a Variety of Polar Solvents and Certain Near-Critical Solvents, Journals of Supercrit. Fluids 8 (1995) 205-216.
	T.W. Randolph, A.J. Randolph, M. Mebes, S. Young. Sub-Micrometer-Sized Biodegradable Particles of Poly (L-Lactic Acid) via the Gas Antisolvent Spray Precipitation Proces. Biotechnol. Progress 9 (1993) 429.
	S. Mawson, K.P. Johnston, D.E. Betts, J.B. McClain, J.M. DeSimone, Stabilized Polymer Microparticles by Precipitation with a Compress Fluid Antisolvent: 1. Poly (Fluoro Acrylates), Macromolecules 30 (1997) 71-77.
	P.D. Condo, D.R. Paul and K.P. Johnston, Glass Transition of Polymers with Compressed Fluid Diluents: Type II and III Behavior, Macromolecules, 27 (1994) 365-371.
Examiner:	Date Considered:
EXAMINER:	

Form PTO-1449 (modified 2/91)	U.S. DEPT OF COMMERCE Patent and Trademark Office	Attorney Docket Number:  94350.00005	Serial No.:  10/820,091
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## FOREIGN PATENT DOCUMENTS

Document number	Date	Country	Class	Sub class	Translation Yes      No

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	E. Reverchon, G. Della Porta, A. Di Trollo, S. Pace, Supercritical Antisolvent Preparation of Nanoparticles of Superconductor Precursors, <i>Ind. Eng. Chem. Res.</i> 37 (1998) 952-958.
	P. Chattopadhyay and R.B. Gupta, Supercritical CO <sub>2</sub> based on Production of Fullerenes Nanoparticles, <i>Ind. Eng. Chem. Res.</i> 39 (2000) 2281-2289.
	L.S. Tu, F. Dehghani, N.R. Foster, Micronisation and Microencapsulation of Pharmaceuticals Using a Carbon Dioxide Antisolvent, <i>Powder Technol.</i> 126 (2002) 134-149.
	A. Blasig, C. Shi, R.M. Enick, M.C. Thies, Effect of Concentration and Degree of Saturation on RESS of a CO <sub>2</sub> - soluble Fluoropolymer, <i>Ind. Eng. Chem. Res.</i> , 41 (20), (2002), 4976-4983.
	K.A. Shaffer, T.A. Jones, D.A. Canelas, J.M. DeSimone, Dispersion Polymerizations in Carbon Dioxide Using Siloxane-Based Stabilizers", <i>Macromolecules</i> , 29 (7), 1996, 2704-2706.
	D.A. Canelas, D.E. Betts, J.M. DeSimone, Poly (vinyl acetate) and Poly (vinyl acetate-co-ethylene) Latexes via Dispersion Polymerizations in Carbon Dioxide, <i>Macromolecules</i> , 31 (20), 1998, 6794-6805.
	M.Z. Yates, G. Li, J.J. Shim, S. Maniar, K.P. Johnston, K.T. Lim, S. Webber, Ambidextrous Surfactants for Water-Dispersible Polymer Powder from Dispersion Polymerization in Supercritical CO <sub>2</sub> ", <i>Macromolecules</i> , 32 (4), 1999, 1018-1026.
	H. Shiho and J.M. DeSimone, Dispersion Polymerization of Acrylonitrile in Supercritical Carbon Dioxide", <i>Macromolecules</i> , 33 (5), 2000, 1565-1569.
	S. Mawson, M.Z. Yates, M.L. O'Neill, K.P. Johnston, Stabilized Polymer Microparticles by Precipitation with a Compressed Fluid Antisolvent. 2. Poly (propylene oxide)-and Poly (butylene oxide)-Based Copolymers, <i>Langmuir</i> , 13 (6), 1997, 1519-1528.

Examiner:	Date Considered:
EXAMINER:	

Form PTO-1449 (modified 2/91)  <b>INFORMATION DISCLOSURE CITATION</b> (Use several sheets if necessary)	U.S. DEPT OF COMMERCE Patent and Trademark Office		Attorney Docket Number:  94350.00005	Serial No.:  10/820,091
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Document number	Date	Country	Class	Sub class	Translation Yes      No

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	Charoenchaitrakool, M; Dehghani, F; Foster, N.R., "Micronization by rapid expansion of supercritical solution to enhance the dissolution rate of poorly water-soluble pharmaceuticals", <i>Ind. Eng. Chem. Res.</i> 39, 2000, 4794-4802.
	Elvassore, N.; Bertucco, A.; Caliceti, P., "Production of protein-loaded polymeric microcapsules by compressed CO <sub>2</sub> in a mixed solvent", <i>Ind. Eng. Chem. Res.</i> 40, 2001, 795-800.
	Falk, R.; Randolph, T.W.; Meyer, J.D.; Kelly, R.M.; Manning, M.C., "Controlled release of ionic compounds from poly (L-lactide) microspheres produced by precipitation with a compressed antisolvent", <i>J. Control. Rel.</i> , 44, 1997, 77-85.
	Ghaderi, R.; Artursson, P.; Carlfors, J., "A new method for preparing biodegradable microparticles and entrapment of hydrocortisone in D,L-PLG microparticles using supercritical fluids", <i>European J. of Pharm. Sci.</i> , 10, 2000, 1-9.
	Thies, J. and Müller, B. W., "Size controlled production of biodegradable microparticles with supercritical gases", <i>European J. Pharm. Biopharm.</i> , 45, 1998, 67-74.
	Tu, L. Sze.; Dehghani, F.; Foster, N.R., "Micronisation and encapsulation of pharmaceuticals using a carbon dioxide antisolvent", <i>Powder Technol.</i> 126, 2002, 134-149.
	J.X. Zhang, L.Q. Gao, Nanocomposite powders from coating with heterogeneous nucleation processing, <i>Ceram. Int.</i> 27 (2001) 143.
	S.Y. Chang, L. Liu, S.A. Asher, Preparation and properties of tailored morphology, monodisperse colloidal silica-cadmium sulfide nanocomposites, <i>J. Am Chem. Soc.</i> 116 (1994) 6739.
	J.C. Leroux, E. Allémann, R.D. Jaeghere, E. Doelker, R. Gurny, Biodegradable nonoparticles-from sustained release formulations to improved site specific drug delivery, <i>J. Control. Rel.</i> 39 (1996) 339.
	H. Cohen, R.J. Levy, J. Gao, V. Kousev, S. Sosnowski, S. Slomkowski, G. Golomb, Sustained delivery and expression of DNA encapsulated in polymeric nonoparticles, <i>Gene Ther.</i> 7 (2000) 1896.
	Y. Zhang, Q Zhang, Y. Li, N. Wang, J. Zhu, Coating of carbon nanotubes with tungsten by physical vapor deposition, <i>Solid State Comm.</i> 115 (2000) 51.
	D. Shi, S.X. Wang, W.J. Ooi, L.M. Wang, J.G. Zhao, Z. Yu, Uniform deposition of ultra thin polymer films on the surface of Al <sub>2</sub> O <sub>3</sub> nanoparticles by a plasma treatment, <i>Appl. Phys. Lett.</i> 78 (2001) 1243.

Examiner:	Date Considered:
EXAMINER:	

Form PTO-1449 (modified 2/91)	U.S. DEPT OF COMMERCE Patent and Trademark Office	Attorney Docket Number:  94350.00005	Serial No.:  10/820,091
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## FOREIGN PATENT DOCUMENTS

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## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	J.S. Hrkach, M.T. Peracchia, A. Domb, N. Lotan, R. Langer, Nonotechnology for biomaterials engineering: structural characterization of amphiphilic polymeric nonoparticles by <sup>1</sup> H NMR spectroscopy, Biomaterials 18 (1997) 27.
	K.W. Leong, H.-Q. Mao, V.L. Truong-Le, K. Roy, S.M. Walsh, J.T. August, DNA-polycation nonospheres as non-viral gene delivery vehicle, J. Control. Rel. 53 (1998) 183.
	Y.S. Jong, J.S. Jacob, K.-P. Yip, G Gardner, E. Seitelman, M. Whitney, S. Montgomery, E. Mathiowitz, Controlled release of plasmid DNA, J. Control. Rel. 47 (1997) 123.
	K. Fu, K. Griebenow, L. Hseih, V.M. Klibanov, R. Langer, FTIR characterization of the secondary structure of proteins encapsulated within PLGA microspheres, J. Control. Rel. 58 (1999) 357.
	A.J. Ruys, Y.W. Mai, The nonoparticle-coating process; a potential sol-gel route to homogenous nanocomposites, Mater. Sci. Eng. A 265 (1999) 202.
	A. Tsutsumi, S. Nakamoto, T. Mineo, K. Yoshida, A novel fluidized-bed coating of fine particles by rapid expansion of supercritical fluid solutions, Powder Technol. 85 (1995) 275.
	T.J. Wang, A. Tsutsumi, H. Hasegawa, T. Mineo, Mechanism of particle coating granulation with RESS process in a fluidized bed, Power Technol. 118 (2001) 229.
	E. Reverchon, G. Della Porta, I. De Rosa, P. Subra, D. Letourneur, Supercritical antisolvent microinization of some biopolymers, J. Supercrit, Fluids 18 (2000) 239.
	C.S. Lengsfeld, J.P. Delplangue, V.H. Barocas, T.W. Randolph, Mechansim governing microparticle morphology during precipitation by a compressed antisolvent: atomization vs. nucleation and growth, J. Phys. Chem. 104 (2000) 2725-2735.
	S. Bristow, T. Shekunov, B. Yu. Shekunov, P. York, Analysis of the supersaturation and precipitation process with supercritical CO <sub>2</sub> , J. Supercrit, Fluids 21 (2001) 257-271.
	E. Reverchon, Supercritical antisolvent precipitation of micro- and non-particles, J. Supercrit, Fluids 15 (1999) 1.

Examiner:	Date Considered:
EXAMINER:	